

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application No: 10/813,242
Filing Date: March 30, 2004
Applicant(s): Sellers et al.
Confirmation No: 4836
Group Art Unit: 3679
Examiner: Nahid Amiri
Title: METAL SPLIT BEARING COMPRESSION LOAD BALL JOINT
Attorney Docket No: CH-30684 (710240-576)
Customer No: 59582

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APPEAL BRIEF

This brief is submitted in support of the Notice of Appeal of the Final Rejection filed July 27, 2010.

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I. Real Party in Interest

The real party in interest in this matter is Federal-Mogul World Wide, Inc., of Southfield, Michigan (hereinafter "Federal-Mogul").

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1, 3-8 and 10-11 are pending in the application. Claim 1 is in independent form. Claims 2 & 9 are canceled, and Claim 12 is withdrawn from consideration.

The rejection of Claims 1, 3-8 and 10-11 is being appealed.

IV. Status of Amendments

An Amendment in response to a Final Office Action mailed on April 27, 2010 was filed on June 23, 2010, which was acted upon by the examiner in an Advisory Action mailed June 30, 2010. The Office Action made Final along with the response and the advisory action set forth opposing views with respect to the merits of the final rejection, thus, providing the issues in dispute for this appeal.

V. Summary of Claimed Subject Matter

Claim 1 is the only independent claim in this case. Claim 1 is best understood with reference to Figure 1A, and with the following citations to Appellant's specification.

Independent Claim 1

A moveable joint 100 (Fig 1A) [0018] comprising a metal housing 102 (Fig 1A) [0018] having a side wall which defines a central bore 104 having a closed end 106 and an open end 108 (Fig 1A) [0018] , said metal housing 102 having an axial lubrication port 109 disposed in said closed end 106 of said central bore 104 [0018]; a metal lower bearing 126 (Fig 1A) [0020]

disposed within said central bore 104 adjacent said closed end 106, said metal lower bearing 126 including a lubrication slot 134 [0020] disposed on an inner bearing surface 128 (Fig 1A) [0020], said lubrication slot 134 being generally axially aligned with said central lubrication port 137 in said metal housing 102 to provide a common lubrication passageway [0020]; a metal moveable member 132 having a head end portion 130 [0021] disposed in said central bore 104 and a shank portion 138 extending from said head end portion 130, said head end portion 130 engaging said metal lower bearing 126 in said central bore 104 (Fig 1A) [0021], said shank portion 138 being at least partially disposed outside of said central bore 104, said head end portion 130 further including a flat spot (Fig 1A) in direct facing opposition to said lubrication slot 134 of said metal lower bearing 126; a one-piece annular metal upper bearing 150 (Fig 1A) [0023] disposed about said moveable member 132 within said central bore 104 adjacent said open end 108, said annular metal upper bearing 150 having an inner surface 156 engaging said head end portion 130 in direct metal-to-metal sliding contact [0024], an outer surface 162 [0023] directly engaging said side wall, and a split segment 160 [0023] extending from said inner surface 156 to said outer surface 162 establishing two opposing free ends and thereby providing a degree of circumferential flexibility to said annular metal upper bearing 150 [0023-25]; an annular cover plate 154 [0025] disposed about said moveable member 132 and secured within said central bore 104 adjacent said open end 108; and a spring member 152 [0024] compressed between said annular cover plate 154 and an upper surface 164 of said annular metal upper bearing 150 (Fig 1A) [0024].

Dependent Claim 3

Claim 3 depends on claim 1 but contains the additional limitations wherein the annular cover plate 154 and the spring member 152 [0024] are composed of metal.

Dependent Claim 4

Claim 4 depends on claim 1 but contains the additional limitations wherein the spring member 152 is configured to exert an axial preload force on said annular metal upper bearing 150 towards said closed end 106 of said central bore 104 and wherein the annular metal upper bearing 150 is configured to engage the side wall 120 and the head end portion 130 simultaneously [0024].

Dependent Claim 5

Claim 5 depends on claim 1 but contains the additional limitations wherein the annular metal upper bearing 150 is axially displaceable within the central bore 104 [0025].

Dependent Claim 6

Claim 6 depends on claim 1 but contains the additional limitations wherein the metal lower bearing 126 is retained with the central bore 104 by an interference fit [0020].

Dependent Claim 7

Claim 7 depends on claim 1 but contains the additional limitations wherein the movable joint 100 further includes a dust boot restrictor 168 disposed about said shank portion 140 [0026].

Dependent Claim 8

Claim 8 depends on claim 1 but contains the additional limitations wherein the movable joint 100 further includes a flexible dust cover 170 coupled between said housing 102 and said shank portion 140 of said moveable member 132 [0027].

Dependent Claim 10

Claim 10 depends on claim 1 but contains the additional limitations wherein the housing 102 includes a deformable annular region 124 [0026] adjacent said open end 108 of said central

bore 104, said deformable annular region 124 adapted for radially inward deformation [0025] to secure said annular cover plate 154 within said central bore 104.

Dependent Claim 11

Claim 11 depends on claim 1 but contains the additional limitations wherein the annular cover plate 154 includes a chamfered inner surface 166 [0025].

VI. Grounds of Rejection to be Reviewed on Appeal

1. The rejection of Claims 1, 3-6 and 10 under 35 U.S.C. 103(a) as being unpatentable over Maughan (US 6,042,293) in view of Gunn et al. (US 5,112,153) and Graham et al. (US 2,635,906).

2. The rejection of Claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Maughan in view of Gunn et al. and Graham et al., and further in view of Herbenar (US 3,128,110).

3. The rejection of Claim 11 under 35 U.S.C. 103(a) as being unpatentable over Maughan, Gunn et al. and Graham et al., and further in view of Kern, Jr. et al. (US 5,116,159).

VII. Arguments

The rejection of Claims 1, 3-6 and 10 under 35 U.S.C. 103(a) as being unpatentable over Maughan (US 6,042,293) in view of Gunn et al. (US 5,112,153) and Graham et al. (US 2,635,906).

1. The Examiner has rejected claims 1, 3-6 and 10 under 35 USC 103(a) as being unpatentable over Maughan (6,042,293) in view of Gunn (5,112,153) and Graham (2,635,906). The Applicant respectfully traverses these rejections and seeks the Board's reconsideration.

Claim 1

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 1. The central issue surrounding the failure to establish a prima facie case revolves around the analysis of the Gunn et al. reference (US 5,112,153). The Applicant respectfully requests the Board's reconsideration of the Examiner's inferences made in connection with the teachings in Gunn et al. It is noteworthy that no anticipating reference has been found, even though the technology here is remarkably mature. The Examiner's position is that the metal composition of the base reference can be combined with Gunn's split bearing example in a non-metallic construction is without any corroborating support. Rather, a hindsight reconstruction of the prior art, made possible only by the teachings in this Applicant's disclosure, provides the only foundation for the persistent rejections.

The Applicant asserts that the Examiner's regarding of "can be" language in Column 5, lines 8-11 of Gunn appears also to be motivated by hindsight. In this passage, Gunn clearly suggests that the non-metallic material choices could be used for the two-piece bearing parts 32 and 32'. However, Gunn never suggests or implies that the metallic material choices could be used for the one-piece bearing part 32'. The reason is provided in Gunn's specification at Column 6, beginning with line 15:

The spherical socket bearing 32' is one piece and is made from plastic so it can be assembled onto the ball head of the stud by simply pressing and snapping the ball end of the stud into the bore of the split bearing ring which being made from plastic has elasticity and can spread apart to receive the ball.

The Applicant respectfully asserts that the Examiner's analysis of Gunn is further in error due to a misinterpretation of the reference. The Applicant wishes to refute comments appearing on Pages 7-8 of the Final Rejection which are believed to inaccurately interpret the Gunn et al. reference. Reference is made specifically to the Final Rejection, pg. 7, last paragraph, "*Further*,

as clearly stated in the abstract at lines 17-19, the one-piece bearing can be made from metal bearing material or a plastic bearing material."

For comparison, the actual lines 17-19 of the abstract in Gunn et al. are reprinted below:

bracket. The bearing socket can be one or two pieces and can be made from metal bearing material or a plastic bearing material.
The method of assembling the joint

The Applicant contends, with all due respect, that Gunn does not actually teach that the "one-piece bearing can be made from metal" as presumed in the Final Rejection. An un-biased reading of Gunn et al. (i.e., one not influenced by hindsight of the Applicant's claimed invention) reveals that Gunn's bearing socket is proposed in several different embodiments which include a two-piece design 32, a one-piece design 32' (as shown in Figure 6), or a two-piece design 32''. The Abstract of Gunn et al. does indicate that the composition of the bearing socket can be metal or plastic, however it does not teach that the one piece design (32') can be either plastic or metal.

Considerable light is shed on this issue throughout the specification of Gunn et al. For example, Gunn et al. at Column 4, lines 25-27 state:

FIG. 6 is a detail view showing a one-piece split bearing socket embodiment which can be used with plastic bearing material;

This passage in Gunn teaches that the one-piece embodiment (32') shown in Figure 6 is made of plastic. It does not suggest or imply that a metal composition for the Figure 6 embodiment would be acceptable.

Gunn et al. at Column 5, lines 5-11 are particularly clear:

A suitable material for bearings 32 and 32'' is metal bearing material such as sintered bronze, whereas the bearing shape 32' with one split piece is the contemplated preferable configuration which can be made from a glass fiber, teflon filled nylon bearing, which, if desired, can also be used as the material for the two piece bearing parts of bearings 32 and 32''.

In this passage, Gunn teaches that the two-piece embodiment (32 and 32'') could, alternatively, be made of plastic. Contrary to arguments advanced in the Final Rejection, however, there can not be found within the four corners of Gunn et al. any suggestion that the one-piece embodiment (32') could alternatively be made of metal.

In yet another passage, Gunn et al. describes the necessity for plastic as used in the one-piece split design (32') in Column 6, lines 15-21:

The spherical socket bearing 32' is one piece and is made from plastic so it can be assembled onto the ball head of the stud by simply pressing and snapping the ball end of the stud into the bore of the split bearing ring which being made from plastic has elasticity and can spread apart to receive the ball. Further steps in completing the assembly are described above.

The rejection of Applicant's Claim 1, based on a presumption that Gunn et al. teaches or suggests a metal one-piece split bearing is not supported by a plain reading of Gunn's specification.

Accordingly, the Applicant respectfully requests the Board's reconsideration of the outstanding Rejections on the basis that a *prima facie* case of obviousness has not been made with respect to Applicant's claims. Gunn's bearing 32' is neither an "upper" bearing within the meaning ascribed in Applicant's claims, nor is it made from metal, nor is it a metal one-piece split bearing, nor is there any uncontroverted prior art evidence to suggest otherwise.

Claim 3

The Applicant respectfully asserts that the Examiner has failed to establish a *prima facie* case of obviousness in the purported rejection of claim 3. The Applicant respectfully asserts that Claim 3 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). Additionally, the Applicant respectfully asserts that the Examiner has erred in the assertion that

the metal cap and spring in Graham may be combined with Maughan and Gunn to render the limitations of claim 3 obvious. It should be appreciated that there lies a significant difference in technology between the Maughan and Graham references that do not motivate combination absent the hindsight teachings of the present application. It should be understood that all-metal bearing constructions were virtually abandoned with the advent of high density plastic materials such as nylon. While less durable than metal, polymer bearing materials provide better friction characteristics, lubricity and shock absorption. As a result the industry moved away from all-metal bearing designs. The Applicant's claimed invention, however, moves in a direction different than the technology trends documented in the cited references, by returning to an all-metal bearing construction for the purposes of substantially increased resistance to wear. In order to overcome the historic shortcomings of known all-metal bearing constructions, the Applicant has developed a combination of features (as recited in claims 1 and 3) which enable the use of all-metal construction without the negative side effects of the antiquated known systems. Therefore, the Applicant asserts that the metal construction of Graham is not obviously combinable with the Maughan reference as asserted by the Examiner absent improper hindsight provided by the present application. Reconsideration of the Board is respectfully requested.

Claim 4

The Applicant respectfully asserts that the Examiner has failed to establish a *prima facie* case of obviousness in the purported rejection of claim 4. The Applicant respectfully asserts that Claim 4 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). Additionally, the Applicant respectfully sets forth the assertion as established above with regard to claim 3, that the combination of the metal spring member in Graham is not properly

combinable with the plastic technology associated with Maughan. Furthermore, the cited references fail to teach the claimed limitations wherein the annular metal upper bearing 150 is configured to engage the side wall 120 and the head end portion 130 simultaneously [0024]. The Board's reconsideration is formally requested.

Claim 5

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 5. The Applicant respectfully asserts that Claim 5 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). However, to simply the subject matter on appeal claim 5 will be allowed to rise or fall based upon the allowability of independent claim 1 upon which it depends.

Claim 6

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 6. The Applicant respectfully asserts that Claim 6 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). However, to simply the subject matter on appeal claim 6 will be allowed to rise or fall based upon the allowability of independent claim 1 upon which it depends.

Claim 10

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 10. The Applicant respectfully asserts that Claim 10 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn

reference). However, to simply the subject matter on appeal claim 10 will be allowed to rise or fall based upon the allowability of independent claim 1 upon which it depends.

The rejection of Claims 7 and 8 under 35 U.S.C. 103(a) as being unpatentable over Maughan in view of Gunn et al. and Graham et al., and further in view of Herbenar (US 3,128,110).

2. The Examiner has rejected claims 7 and 8 under 35 U.S.C. 103(a) as over Maughan in view of Gunn et al. and Graham et al., and further in view of Herbenar (US 3,128,110). The Applicant respectfully traverses these rejections and seeks the Board's reconsideration.

Claim 7

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 7. The Applicant respectfully asserts that Claim 7 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). Additionally, the Applicant respectfully asserts that the Examiner has erred in the assertion that the Herbenar (3,128,100) teaches the additional limitations recited in claim 7 wherein the movable joint 100 further includes a dust boot restrictor 168 disposed about said shank portion 140 [0026]. The Applicant respectfully asserts that the recited element "dust boot restrictor" 168 is not obvious in light of the dust boot 74 of Herbenar. Rather the specification of the present application clearly identifies the dust boot restrictor 168 as a separate and distinct element from the flexible dust cover 170. As defined by the specification, the dust boot restrictor 168 is a tubular body limiting the range of articulation of the stud member 132. The cited dust jacket 74

of Herbenar does not teach or suggest a similar element to the claimed restrictor 168. The Board's reconsideration is formally requested.

Claim 8

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 8. The Applicant respectfully asserts that Claim 8 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). However, to simply the subject matter on appeal claim 8 will be allowed to rise or fall based upon the allowability of independent claim 1 upon which it depends.

The rejection of Claim 11 under 35 U.S.C. 103(a) as being unpatentable over Maughan, Gunn et al. and Graham et al., and further in view of Kern, Jr. et al. (US 5,116,159).

3. The Examiner has rejected claim 11 under 35 U.S.C. 103(a) as being unpatentable over Maughan, Gunn et al. and Graham et al., and further in view of Kern, Jr. et al. (US 5,116,159). The Applicant respectfully traverses this rejection and seeks reconsideration of the Board.

The Applicant respectfully asserts that the Examiner has failed to establish a prima facie case of obviousness in the purported rejection of claim 11. The Applicant respectfully asserts that Claim 11 is allowable for at least the same reasons established for the allowability of independent claim 1 upon which it depends (namely the inaccurate interpretation of the Gunn reference). Additionally, claim 11 contains the additional limitations wherein the annular cover plate 154 includes a chamfered inner surface 166 [0025]. The Examiner improperly dismisses this additional limitation as obvious citing Kern (5,116,159) for the use of a chamfered edge 54

and Maughan for the use of an annular cover plate. The Applicant respectfully asserts that this rejection is in error. Although Maughan fails to teach the use of an annular cover plate, the Applicant assumes that the Examiner meant to cite Graham for this element. In either case, however, the chamfered edge 54 of Kern is posited to provide a greater extrusion capacity of plastic on the bearing portion. This fails to teach the claimed limitation of a metal annular cover plate 154 with a chamfered inner surface 166. The claimed limitation provides clearance for the movable stud member 132 during articulation [0025]. This advantage is not taught or suggested by the chamfered socket bearing of Kern. The Applicant respectfully requests the Board's reconsideration.

VIII. Conclusion

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections and to issue Claims 1, 3-8 and 10-11 remaining in this case.

The Patent Office is authorized to charge any fee deficiency or refund any excess to Deposit Account No. 04-1061.

Respectfully submitted,



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IX. Claims Appendix

1. (Appealed) A moveable joint comprising:

a metal housing having a side wall which defines a central bore having a closed end and an open end, said metal housing having an axial lubrication port disposed in said closed end of said central bore;

a metal lower bearing disposed within said central bore adjacent said closed end, said metal lower bearing including a lubrication slot disposed on an inner bearing surface, said lubrication slot being generally axially aligned with said central lubrication port in said metal housing to provide a common lubrication passageway;

a metal moveable member having a head end portion disposed in said central bore and a shank portion extending from said head end portion, said head end portion engaging said metal lower bearing in said central bore, said shank portion being at least partially disposed outside of said central bore, said head end portion further including a flat spot in direct facing opposition to said lubrication slot of said metal lower bearing;

a one-piece annular metal upper bearing disposed about said moveable member within said central bore adjacent said open end, said annular metal upper bearing having an inner surface engaging said head end portion in direct metal-to-metal sliding contact, an outer surface directly engaging said side wall, and a split segment extending from said inner surface to said outer surface establishing two opposing free ends and thereby providing a degree of circumferential flexibility to said annular metal upper bearing;

an annular cover plate disposed about said moveable member and secured within said central bore adjacent said open end; and

a spring member compressed between said annular cover plate and an upper surface of said annular metal upper bearing.

2. (Cancelled)

3. (Appealed) The moveable joint of Claim 1 wherein said annular cover plate and said spring member are composed of metal.

4. (Appealed) The moveable joint of Claim 1 wherein said spring member is configured to exert an axial preload force on said annular metal upper bearing towards said closed end of said central bore; and

wherein said annular metal upper bearing is configured to engage said side wall and said head end portion simultaneously.

5. (Appealed) The moveable joint of Claim 1 wherein said annular metal upper bearing is axially displaceable within said central bore.

6. (Appealed) The moveable joint of Claim 1 wherein said metal lower bearing is retained with said central bore by an interference fit.

7. (Appealed) The moveable joint of Claim 1 further including a dust boot restrictor disposed about said shank portion.

8. (Appealed) The moveable joint of Claim 1 further including a flexible dust cover coupled between said housing and said shank portion of said moveable member.

9. (Canceled)

10. (Appealed) The moveable joint of Claim 1 wherein said housing includes a deformable annular region adjacent said open end of said central bore, said deformable annular region adapted for radially inward deformation to secure said annular cover plate within said central bore.

11. (Appealed) The moveable joint of Claim 1 wherein said annular cover plate includes a chamfered inner surface.

12. (Withdrawn) A method of assembling a compression load joint, said method comprising the steps of:

providing a metal housing having a side wall which defines a central bore having a closed end and an open end;

inserting a metal lower bearing within said central bore;

providing a moveable member having a head end portion disposed in said central bore and a shank portion extending from said head end portion, the head end portion engaging said metal lower bearing in said central bore, said shank portion being at least partially disposed outside of said central bore;

inserting an annular metal upper bearing within said central bore, about said moveable manner, said annular metal upper bearing having an inner surface engaging said head end portion, an outer surface engaging said side wall, and a split segment linking said inner surface with said outer surface;

disposing an annular spring member within said central bore, about said moveable member, on an upper surface of said annular metal upper bearing;

disposing an annular cover plate within said central bore, about said moveable member, adjacent said annular spring member; and

deforming a rim portion of the housing surrounding said open end radially inward into engagement with said cover plate to form an annular lip which overlies said cover plate, said deforming procedure axially displacing said cover plate and said annular metal upper bearing within said central bore, and compressing said annular spring member to exert an axial load on said annular metal upper bearing.

X. Evidence Appendix

None.

XI. Related Proceedings Appendix

None.